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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
CALANDRA, ANTHONY J				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com

oblonpat@oblon.com

jgardner@oblon.com

Office Action Summary

Application No.

10/565,777

Applicant(s)

ITO, KENICHI

Examiner

ANTHONY J. CALANDRA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Detailed Office Action

1. The communication dated 9/24/2008 has been entered and fully considered.
 2. Claims 1-7 are amended and new claims 8-18 are offered for consideration.
- Claims 1-18 are under consideration.

Response to Arguments

3. Applicant's arguments filed 9/24/2008 have been fully considered but they are not persuasive.

Applicant argues that the amended claims recite an exclusion of acid rosin sizes. As WANG teaches acid rosin sizes applicant states WANG is improper to use to reject the instant claims.

The key to this limitation is the word 'emulsion'. WANG teaches that poly-N-Vinylformamide can be used with an acid rosin soap or acidic rosin emulsion [pg. 1 paragraph 1]. Rosin soap is a highly neutralized soap in the form of a high solids paste or liquid while an acidic rosin emulsion is made by the emulsification of tiny acid rosin size particles in water. Clearly, rosin soap and acidic rosin emulsion size are patentably distinct species. As WANG teaches the poly-N-Vinylformamide can be used with rosin soap instead of acidic rosin emulsion and the applicant does not exclude rosin soap, WANG is still valid for use as prior art.

Additionally, even if the applicant excluded a rosin soap size, at the time of the invention it would have been obvious to a person of ordinary skill in the art to exclude both rosin sizes from papermaking and still use poly-N-vinylformamide. Poly-N-vinylformamide acts as a retention agent by supplying cationic charge [WANG Figure 2]. Cationic charged retention agents allow for the absorption of anionic components on the fiber. A person of ordinary skill in the art would expect the cationic charged Poly-N-vinylformamide to help increase the retention of any anionic charged component; including flourine based oil-proofing agents. The science of retention in papermaking is well known in the art. Cationic retention aides increase cationic charge which balances zeta potential [SMOOK pg. 222]. The balancing of zeta potential allows greater amounts of anionic additives to be retained on the fibers. A person of ordinary skill in the art would readily expect that a cationic retention aid that retained anionic components would also retain an alternative anionic additive such as a perfluoralkylakanol oil proofing size when combined or substituted for the first anionic additive.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 6, applicant does not have explicit or implicit support for excluding acidic rosin emulsion size. Applicant argues that the case law of *In Re Johnson* allows for the addition of a negative limitation with only positive recitation of said recitation. It is the examiners position that the facts of the case and the instant application are different. In the instant application the applicant specifically states that 'there are no particular restrictions on these chemical agents' [Specification pg. 15 lines 4-12]. Therefore adding a limitation of no acidic rosin emulsion would in this particular case, contradict the specification.

Claims 2-5 and 7-18 are dependent on claim 1 and are similarly rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7, 12, 13, 14, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Animated Poly-N-Vinylformamide as a Modern Retention Aid of Alkaline Paper Sizing with acid Rosin Sizes* by Wang et al., hereinafter WANG et al. in view of U.S. Patent # 6,566,470 KANTAMNEI et al., hereinafter '470 patent.

As for claim 1 and 6, WANG discloses a paper making process and paper made by said process wherein a partially animated poly-N-vinylformamide is used as a

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retention aid of a rosin size (*A method for the production of paper comprising adding a fixing agent comprising a polymer in which at least N-vinylformamide is a polymerization component and/or a derivative of said polymer to a paper making process to form a paper product* [abstract and paragraph 2 pg. 1]).

WANG et al. discloses a rosin size but does not disclose a fluorine based oil-proofing agent. Sizing is the process of making paper resistant to liquids. The rosin size disclosed by WANG et al. is used to make paper water resistant. The '470 patent discloses fluorine containing paper sizes which impart both oil and grease resistance [abstract, column 1 lines 20-40]. At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute the acid rosin size of WANG et al. with the perfluoralkylalkanol size taught by the '470 patent. It is *prima facie* obvious to substitute one component of a known method for another known component. The function of the perfluoralkylalkanol was known to impart oil and grease resistance at the time of the invention. Further, the substitution of the size of the '470 patent for the rosin size of WANG et al. would have provided the predictable results of imparting oil resistance to the formed paper. Alternatively, a person of ordinary skill in the art would be motivated to combine the sizing system of WANG et al. with the perfluoralkylalkanol size of the '407 patent as the retention system of WANG et al. showed increased sizing capabilities as compared to not using poly-N-vinylformamide [Figure 3, pg. 3 and 4] further WANG et al. shows increased wet and dry strength due to the use of poly-N-vinylformamide [Figure 8].

As for claim 2 and 3, WANG et al. discloses that the polymer is a hydrolysate derivative of poly-N-vinylformamide [abstract, paragraph 2 pg.1].

As for claim 4 and 12, WANG et al. discloses the range of hydrolysis of 6-95% which encompasses the instant claimed range [pg. 3 paragraph 2]. WANG et al. further discloses the specific embodiments of 80%, 50%, 42%, and 29% formamide which fall within the instant claimed ranges [Figure 1].

As for claims 5 and 7, the '470 patent discloses that the phosphate diesters of perfluoralkylalkanol are the most important type of fluorine containing oil resistant compounds used in the paper industry [column 1 lines 20-35].

As for claims 13 and 14, the '470 patent discloses that the fluorinated oil proofing agent can be added before web formation to the size press in the levels of 0.02 to 1% by weight of dry mass of paper [column 4 lines 22-30].

As for claims 17 and 18, WANG discloses that the polymer can be added at 0.1 N-vinylformamide [pg. 3 column 1]. The '470 patent discloses that the fluorinated oil proofing agent can be added after web formation to the size press in the levels of 0.02 to 1% by weight of dry mass of paper [column 4 lines 22-30]. This is equivalent to a range of 0.1 to 5 times the fixing/retention agent added to fluorine based oil proofing agent which overlaps with the instant claimed range.

Alternatively, it would be obvious to a person of ordinary skill in the art to optimize the amount of N-vinylformamide cationic retention agent necessary to retain the

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anionic fluorine based oil-proofing agent on the paper [see e.g. MPEP 2144.05 (II) (B)

Optimization of ranges and result effective variables].

6. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Animated Poly-N-Vinylformamide as a Modern Retention Aid of Alkaline Paper Sizing with acid Rosin Sizes* by Wang et al., hereinafter WANG et al. in view of U.S. Patent # 6,566,470 KANTAMNEI et al., hereinafter '470 patent as evidenced by Cartons, Crates and Corrugated Board by TWEDE et al., hereinafter TWEDE.

As for claims 15 and 16, the '470 patent discloses that the fluorinated oil proofing agent can be added after web formation to the size press in the levels of 0.02 to 1% by weight of dry mass of paper [column 4 lines 22-30]. The '470 patent does not explicitly disclose what the level of agent proofing agent would be in terms of g/m^2 of paper. For a typical average paper weight of 75 g/m^2 this would range for a surface application from 0.75 to 7.5 g/m^2 which overlaps with the instant claimed ranges. For a typical light weight paper (say tissue) 13 g/m^2 , this would range for a surface application from 0.13 to 1.3 g/m^2 which overlaps with the instant claimed ranges. Finally for heavy papers of 250 g/m^2 this would range for a surface application from 2.5 to 25 g/m^2 . These typical values for paper basis weights are evidenced by TWEDE.

Alternatively, a person of ordinary skill in the art would be motivated to optimize the amount of oil proofing agent added to the surface of the paper (and hence the g/m^2) as to change the amount of oil proofing capabilities given to said paper [see e.g. MPEP 2144.05 (II) (B) Optimization of ranges and result effective variables].

7. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Animated Poly-N-Vinylformamide as a Modern Retention Aid of Alkaline Paper Sizing*

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with acid Rosin Sizes by Wang et al., hereinafter WANG et al. in view of U.S. Patent # 6,566,470 KANTAMNEI et al., hereinafter '470 patent, as applied to claim 1 above, and further in view of U.S. Patent 4,808,683 ITAGAKI et al., hereinafter '683 patent as evidenced by U.S. Patent 5,334,287 HARTMANN et al., hereinafter '287 patent and U.S. Patent 5,491,199 FORD et al., hereinafter '199 patent.

As for claim 8 and 9, WANG teaches that poly-N-Vinylformamide acts as a retention agent in paper making. WANG does not disclose that the copolymers of poly-N-Vinylformamide act as retention agents. The '683 patent discloses N-vinylformamide copolymer [column 7 lines 25-34]. The '683 patent states that the N-vinylformamide monomer is present in the copolymer in a molar ratio of 95:5 (19:1) to 10:90 (1:9). Said molar ratio overlaps with the instant claimed ranges [column 5 lines 15-35]. At the time of the invention it would have been *prima facie* obvious to substitute one known N-vinylformamide containing cationic retention agent for another known cationic retention agent containing N-vinylformamide [see e.g. MPEP 2144.06 (II) Substituting Equivalents Known for the Same Purpose]. A person of ordinary skill in the art would expect both retention agents to retain anionic additives to the paper making fibers.

As for claims 10 and 11, the '683 patent teaches the genus of making copolymers but does not distinguish which the specific species of making copolymers. However, as the genus of generic copolymers is relatively small (random, alternating, block, graft) it is the examiners position that this limitation could be reasonably envisioned by a person of ordinary skill in the art from '683 patent [see e.g. MPEP 2144.08 (II) (A)(a)]. As such, at the time of the invention it would have been obvious to try block or graft copolymerization from the finite number of methods for making a polymer absence

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evidence of unexpected results. The methods of block and graft copolymerization are well known in the art and the artisan of ordinary skill would readily expect success for using any of the known methods for forming polymers. Graft copolymerization is known for producing vinylformamide copolymer as evidenced by the '287 patent [claim 3]. Block copolymerization is known for producing vinylformamide copolymer as evidenced by the '199 patent [column 3 lines 29-42].

8. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent 0280115 AOYAMA et al., hereinafter AOYAMA, in view of *Animated Poly-N-Vinylformamide as a Modern Retention Aid of Alkaline Paper Sizing with acid Rosin Sizes* by Wang et al., hereinafter WANG et al.

As for claims 1, 5-7, AOYAMA discloses an anionic composition of salt of a phosphate or phosphonate prepared by neutralizing at least one partial ester selected from a group consisting of fluoralkyl partial esters of phosphonic acid and adding an anionic surfactant to form an oil resistant composition [pg. 3 lines 38-42, 47-50, and 55-56]. AOYAMA further discloses using a bonding agent [pg. 3 lines 50-55].

AOYAMA does not disclose the use of N-vinylformamide. WANG discloses a paper making process and paper made by said process wherein a partially animated poly-N-vinylformamide is used as a retention aid of a rosin size (*A method for the production of paper comprising adding a fixing agent comprising a polymer in which at least N-vinylformamide is a polymerization component and/or a derivative of said polymer to a paper making process to form a paper product* [abstract and paragraph 2 pg. 1]).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute the bonding agent of AOYAMA with the N-vinylformamide of WANG. It is *prima facie* obvious to substitute one component of a known method for another known component. The function of the N-vinylformamide was known to increase retention of sizing agents. Further, the substitution retention aid of WANG for the binder of AOYAMA would have provided the predictable results of increasing retention. Alternatively, a person of ordinary skill in the art would be motivated to use the sizing system of WANG et al. with the perfluoralkylalkanol compound of the AOYAMA as WANG showed increased sizing capabilities as compared to not using poly-N-vinylformamide [Figure 3, pg. 3 and 4]. Further WANG et al. shows increased wet and dry strength due to the use of poly-N-vinylformamide [Figure 8]. Finally, WANG is compatible with the goals of AOYAMA of being able to handle hard water. WANG shows the paper formed being able to hold additional calcium carbonate [Figure 6]. Calcium ions are a known component of water hardness.

As for claim 2 and 3, WANG et al. discloses that the polymer is a hydrolysate derivative of poly-N-vinylformamide [abstract, paragraph 2 pg.1].

As for claim 4, WANG et al. discloses the range of hydrolysis of 6-95% which encompasses the instant claimed range [pg. 3 paragraph 2]. WANG et al. further discloses the specific embodiments of 80%, 50%, 42%, and 29% formamide which fall within the instant claimed ranges [Figure 1].

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **ANTHONY J. CALANDRA** whose telephone number is (571) 270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Halpern/
Primary Examiner
Art Unit 1791

/AJC/